

CLAIMS

1. Process for the preparation of a supported zeolite membrane consists of a zeolite/substrate composite layer, whose zeolite phase exhibits a crystallinity of at least 85%, whereby said process comprises:

- a) the formation of a gel or a solution that comprises at least one source of silica and water, supplemented with at least one polar organic compound;
- b) bringing into contact said gel or said solution with a porous substrate;
- c) the crystallization of the zeolite starting from said gel or said solution; and
- d) the elimination of residual agents,

characterized in that, in stage (a), the molar ratio of water to silica in said gel or said solution is 27:1 to 35:1 and wherein in stage (c), the crystallization time is at least 25 hours at a temperature of 100-250°C.

2. Process according to claim 1, wherein in stage (a), the molar ratio of the water to the silica in said gel or said solution is between 27:1 and 32:1.

3. Process according to one of claims 1 to 2, wherein in stage (a), the molar ratio of the water to the silica in said gel or said solution is between 28:1 and 31:1.

4. Process according to one of claims 1 to 3, wherein in stage (c), the crystallization time is at least 65 hours.

5. Process according to one of claims 1 to 4, wherein the zeolite phase exhibits a crystallinity of at least 90%.

6. Process according to one of claims 1 to 5, wherein in stage (a), the molar ratio of the polar organic compound to the silica is between 0.3:1 and 0.6:1.

7. Process according to one of claims 1 to 6, wherein the porous substrate is selected from among the following materials: ceramic based on alumina and/or zirconia and/or titanium oxide, carbon, silica, zeolites, clays, glass and metal.

8. Process according to one of claims 1 to 7, wherein the zeolite phase is of the MFI-structural type.

9. Membrane that is obtained by a process according to one of claims 1 to 8.

10. Membrane according to claim 9, wherein it exhibits, in the n-butane/isobutane separation, an n-butane permeance of at least $3 \cdot 10^{-7}$ mol/m².s.Pa at the temperature of 180°C.

11. Use of a membrane according to one of claims 9 to 10 in a gas-separation process, a vapor-separation process or a liquid-separation process.

12. Use of a membrane according to one of claims 9 to 10 for the separation of linear and branched paraffins.